FIG. 1

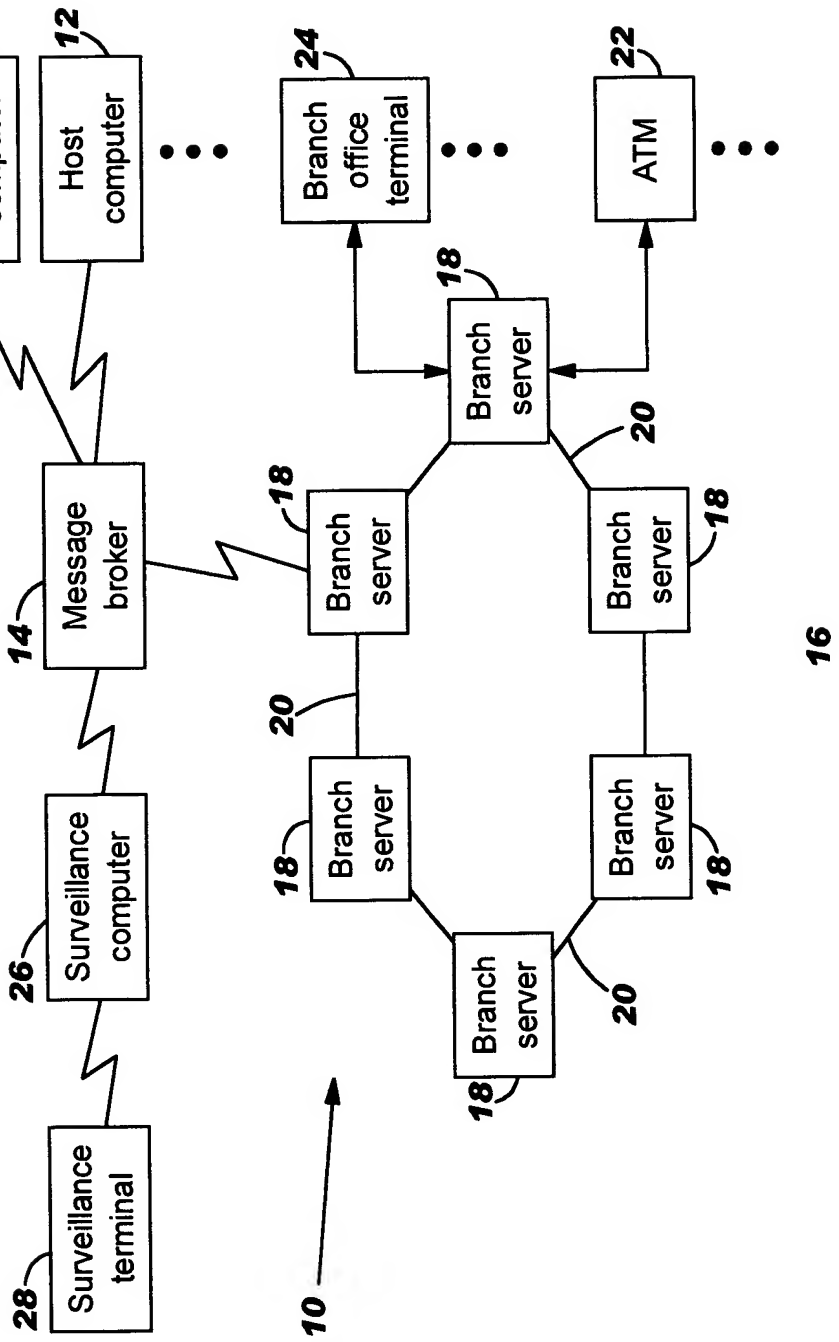

Host computer
12
Host computer
12
Branch office terminal
24
ATM
22
Message broker
14
Branch server
18
Branch server
18
Branch server
18
Branch server
18
Branch server
18
Branch server
18
Branch server
18
20
20
20
20
Surveillance computer
26
Surveillance terminal
28
10
16

FIG. 2A

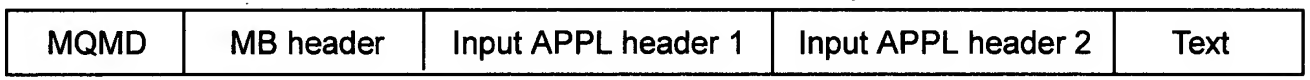


FIG. 2B

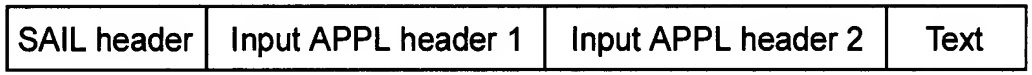


FIG. 2C

FIG. 2D

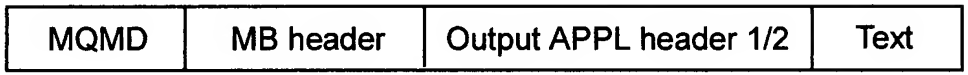


FIG. 3

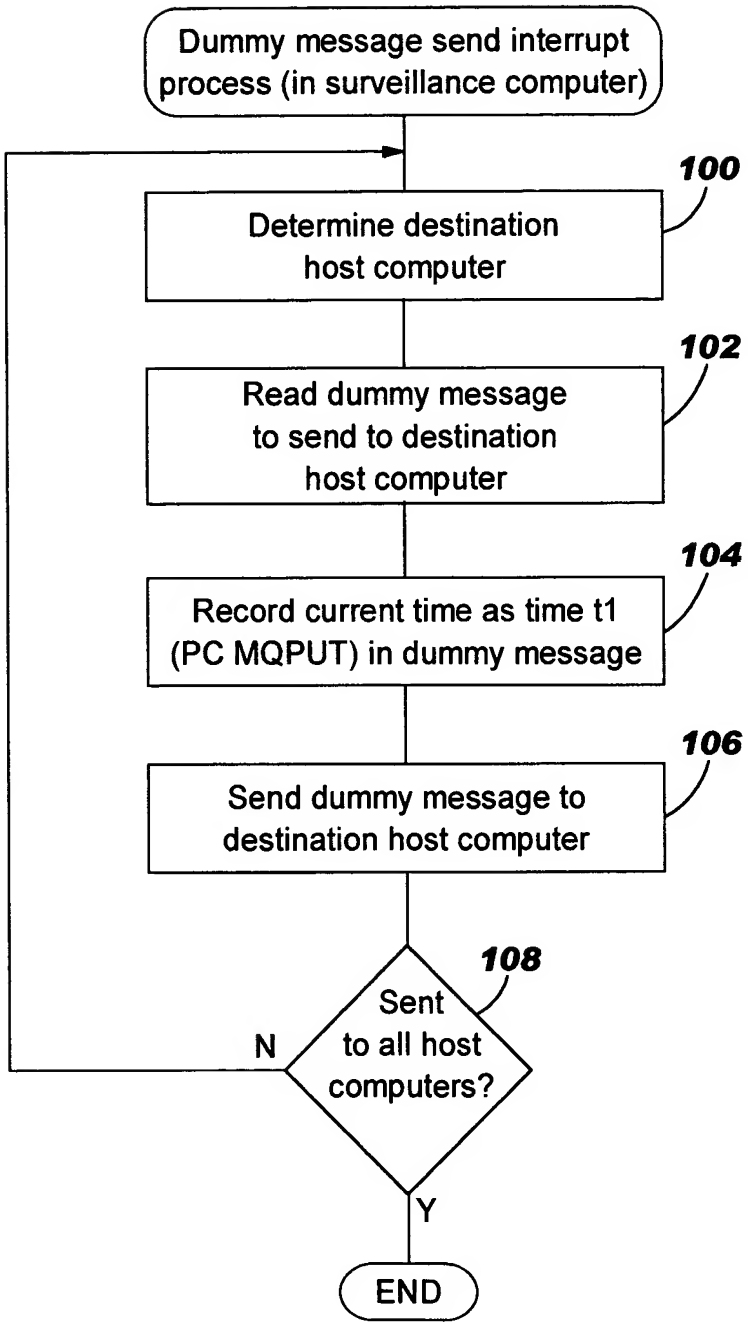

Dummy message send interrupt process (in surveillance computer)
100
Determine destination host computer
102
Read dummy message to send to destination host computer
104
Record current time as time t1 (PC MQPUT) in dummy message
106
Send dummy message to destination host computer
108
Sent to all host computers?
N
Y
END

FIG. 4

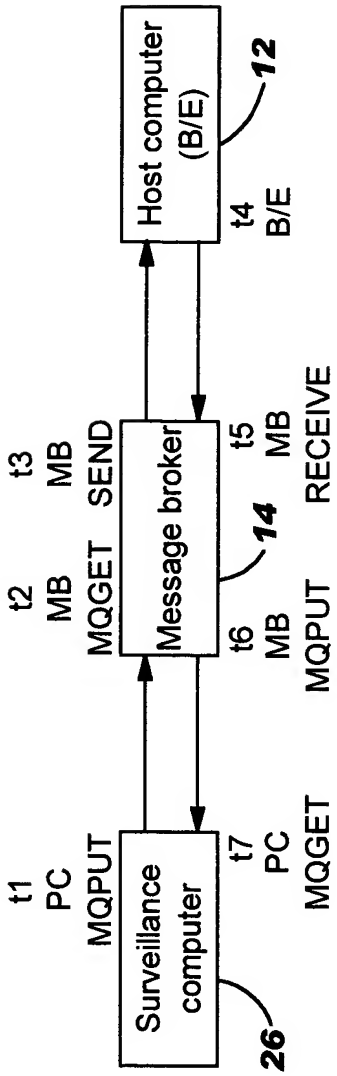
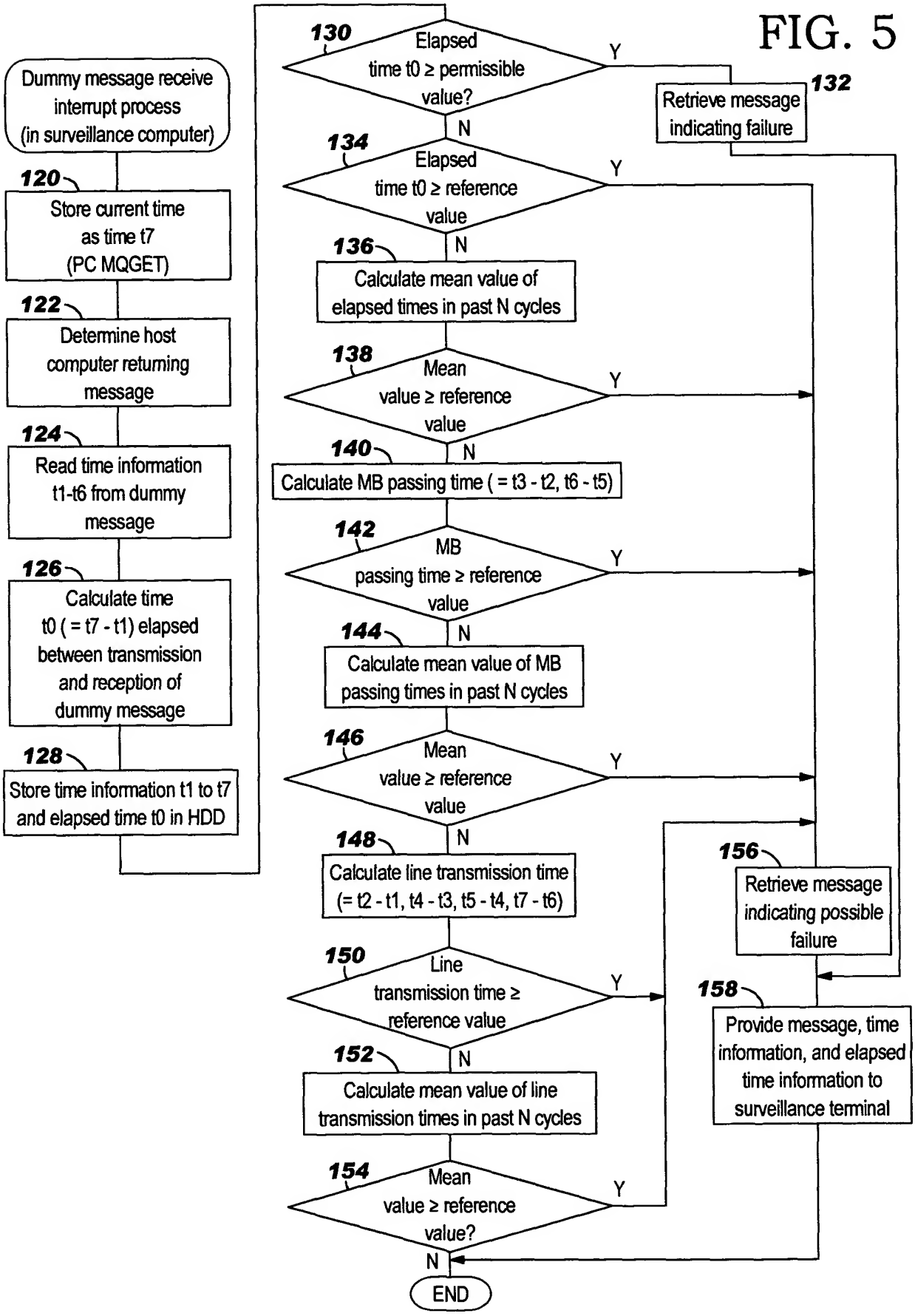

Host computer (B/E)
12
t4 B/E
t3 MB SEND
t5 MB RECEIVE
t2 MB MQGET
Message broker
14
t6 MB MQPUT
t1 PC MQPUT
t7 PC MQGET
Surveillance computer
26

FIG. 5


Dummy message receive interrupt process (in surveillance computer)
120
Store current time as time t7 (PC MQGET)
122
Determine host computer returning message
124
Read time information t1-t6 from dummy message
126
Calculate time t0 (= t7 - t1) elapsed between transmission and reception of dummy message
128
Store time information t1 to t7 and elapsed time t0 in HDD
130
Elapsed time t0 ≥ permissible value?
Y
132
Retrieve message indicating failure
N
134
Elapsed time t0 ≥ reference value
Y
N
136
Calculate mean value of elapsed times in past N cycles
138
Mean value ≥ reference value
Y
N
140
Calculate MB passing time (= t3 - t2, t6 - t5)
142
MB passing time ≥ reference value
Y
N
144
Calculate mean value of MB passing times in past N cycles
146
Mean value ≥ reference value
Y
N
148
Calculate line transmission time (= t2 - t1, t4 - t3, t5 - t4, t7 - t6)
150
Line transmission time ≥ reference value
Y
N
152
Calculate mean value of line transmission times in past N cycles
154
Mean value ≥ reference value?
Y
N
156
Retrieve message indicating possible failure
158
Provide message, time information, and elapsed time information to surveillance terminal
END